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Effects of Serbian Accession to the European Union

Summary: In this article, the global simulation model (GSIM) of Joseph F. Francois and Keith H. Hall (2009) for analyzing global, regional, and unilateral trade policy changes was applied to Serbia. This was to measure the effects of full trade liberalization with the EU after Serbian accession to the EU. As anticipated, most of the changes in welfare after full liberalization of trade between Serbia and EU can be expected in sectors where Serbia has specialized; protection against imports from the EU is strong. However, losses could also occur in sectors that currently face strong protection against the rest of the world and this protection is lost after EU accession. Trade liberalization will lead to a substantial loss of tariff revenues. Reduced consumer prices might, on the one hand increase consumer surplus but on the other hand decrease producer surplus and output in certain industries.

Key words: Cost of protection, Partial equilibrium model, Trade policy modeling, Serbia.

JEL: F13, F15, F17.

The effects of a full trade liberalization of Serbian imports originating from the Stabilization and Association Agreement (SAA) and European Union (EU) countries shall be measured using the global simulation model (GSIM) for individual Serbian industries. The model estimates trade effects, welfare effects (producer surplus, consumer surplus, and change in tariff revenue), and price and output changes. This information shall be used to identify those sectors that would be affected most by full liberalization. The impact on tariff revenues shall be investigated as tariffs are an important source of revenue for the Serbian budget. In this exercise, we follow closely the methodology developed by Mario Holzner (2004, 2006, 2008).

Serbia signed an SAA in April 2008. This is a specific type of agreement on the association created by the EU for the Western Balkan countries. SAAs are similar in their nature and objectives to the European Agreements, signed during the 1990s between the European Community and Central and Eastern European Countries (CEECs).

The main goal of the above-mentioned agreement is boosting economic cooperation by establishing a free trade zone. Apart from the rules concerning economic cooperation, the agreement consists of many other instruments that should support the stabilization of the political, social, and economic situation in the associated countries.

However, our aim in this article is to specifically estimate the effects of tariff liberalization of Serbian imports originating from the SAA and EU countries.

The SAA states that within 6 years, both contracting sides should establish the free trade zone, with a full and free movement of goods, without tariffs and taxes of equivalent effects and without quantitative export and import limitations. This is very important for Serbia, because the EU is its most important trading partner. More than half of the Serbian world trade comprised trade with the EU: in 2009, Serbian export to the EU countries amounted 53.6% of the overall exports, whereas the share of imports from the EU countries amounted 56.8% of the overall Serbian imports in the same year.

From the date of SAA taking effect, the Community will abolish the custom duties and charges having equivalent effect on imports of agricultural products originating from Serbia other than those of the headings 0101 (live bovine animals), 0201 (meat of bovine animals, fresh or chilled), 1701, 1702 (sugar, other sugars, including chemically pure lactose) of the Combined Nomenclature (CN).

Also the community will apply a duty-free access of imports for products originating from Serbia of the headings 1701 and 1702 (sugar, other sugars) of the CN, within the limit of the annual tariff quota of 180.000 tonnes (net weight).

The Community shall fix the custom duties applicable to imports into the Community of “baby beef” products (defined in Annex II of SAA) originating in Serbia at 20% of the ad valorem duty and 20% of the specific duty as laid down in the Common Customs Tariff, within the limit of an annual tariff quota of 8700 tonnes expressed in carcass weight.

In addition, all custom duties and measures having equivalent effect on fish and fishery products originating from Serbia other than those listed in Annex IV of SAA shall be eliminated.

The EU has to remove all tariffs and quotas for imports of industrial goods from Serbia. At the same time, the EU will remove all quotas and measures with the same effect in the case of the import of the agricultural products from Serbia.

Similarly, Serbia will remove all quotas, as well as most of the tariffs for imports of industrial goods from the EU. Until the end of the Interim Agreement, Serbia will reduce and remove all remaining import tariffs for industrial goods, as well as current import tariffs for agricultural products from the EU step by step.

When it comes to the concessions offered by Serbia, from the date of SAA taking effect, Serbia will eliminate all custom duties and measures having equivalent effect on fish and fishery products originating in the Community other than those listed in Annexes V, which are part of the SAA.

The agreement explicitly states that from the moment of its coming into force, the trade between both contract sides should neither be accompanied by the introduction of new export and import tariffs and taxes with similar effects, nor by raising the current ones. The same holds true for introducing new quotas or raising their restrictiveness.

Except for the removing of all quotas and tariffs, the Agreement impedes all kinds of open or hidden fiscal discrimination in the case of trade between the contract sides. The EU and Serbia have taken responsibility to stop introducing and to remove already introduced internal fiscal measures that can discriminate similar products, directly or indirectly.

Simultaneously, Serbia has signed an Interim Agreement about trade and trade issues with the EU, which should be implemented until the end of the process of ratification and coming into force of the SAA. The SAA should be signed by the European communities (European community and European community for atomic energy) and by the EU member states to come into force, which is a complicated procedure, which might last more than three years. To overcome this long procedure, according to the article 139 of the SAA contract, both sides will accept those parts that are under the competence of the European communities (the whole title 4 - free trade of goods, as well as the parts of the titles 6 rules about competition and state aid (articles 73 and 74) and the rules about intellectual property (article 75)) to create an Interim Agreement, which can come into force immediately thanks to the fact that it can be signed by the European community and Serbia only, and must not be ratified by all EU member states. The Interim Agreement is valid until the SAA comes into force.

It is worth mentioning that Serbia has already had the opportunity to export almost all its products tariff free to the EU market, according to the unilateral EU Autonomous Trade Measures (ATM). On the other hand, Serbia will reduce all tariffs for industrial goods for six years from the establishment of the Interim agreement, as well as the tariffs for the agricultural products originating from the EU by 75%.

For the process of the identification of sensitive products and an acceptable tempo of liberalization, the following criteria were taken into consideration: current level of tariff protection (products with the highest level of protection have a higher level of sensibility), fiscal effects, sensibility of the specific industrial sectors and its competitiveness, the role of the specific product in trade with the EU, role in GDP, social dimension and number of employees, the perspective of the already started process of privatization (protection until the end of the process of privatization), regional dimension (role of the specific product in the regional context, notably in the case of the less developed regions), and role of the specific product in the ability to employ specific categories of inhabitants (e.g. women, low qualified people).

Step-by-step liberalization means that trade with insensitive products will be fully liberalized immediately after the Interim Agreement comes into force, and that sensitive products will be liberalized in the period of 6 years after its coming into force. During negotiations, the following sectors were marked as sensitive: chemical products, leather, wood industry and furniture, production of basic metals and electro industry, as well as steel production.

Serbia has already had the opportunity to freely export its goods to the EU since 2000, but in the case of the SAA, Serbia will make a formal step in the process of institutionalizing relations with the EU. Free export of Serbian goods to the EU market, will not be any more the consequence of a one-sided expressed will, but a contract obligation for both sides. Unilaterally created measures (ATM) by the EU can be unilaterally removed, which will not be the case in the SAA process.

Thanks to the unilaterally introduced ATMs, Serbian external trade between 2000 and 2008 was marked by a positive trend in terms of imports covered by exports. According to the findings provided by the Serbian Council for European Inte-

gration, Serbian import in 2002 was covered by exports by a rate of 37%. In 2005, the coverage was 42.8% and in 2008 the export/import ratio was at 45.1%. Since 2004, Serbia has exported more agricultural and industrial products into the EU than imported from the EU.

As for the negative consequences of the implementation of the SAA and the free trade zone, we can expect that imports will rise and therefore also the trade deficit, fiscal revenues as a result of the decreased tariff revenues will drop (which can be counteracted with a tax reform and the reduction of tax evasion), additional costs of the adaptation of the Serbian economy to the increased competition provoked by the bigger market, which can be seen in the form of the costs of the liquidation and reconstruction of enterprises, costs of the adaptation to the ecological standards, social costs, which we can be observed in the costs of social programs, as well as costs directed to overcome the high rate of unemployment in the early stages of the opening of the domestic market. All the above-mentioned negative consequences can be solved in the medium- and long-term, if Serbia adopts an appropriate economic and social policy.

We can also expect positive consequences related to the SAA and the free trade zone: long-term access to the EU market, increasing foreign direct investment (FDI), provoked by a good and stable investment-friendly environment and improved chances to export goods to the huge EU market. In addition, we can expect positive employment effects in the second stage of the process of liberalization as the private sector will expand, especially the service sector. Domestic consumers will have the opportunity to choose between domestic and foreign goods and services.

1. The Structure of Serbian Trade

According to the economic use, Serbian exports consist mainly of raw materials and intermediate goods. According to the divisions of the Standard International Trade Classification (SITC), the following items had the greatest export shares in 2005: iron and steel (USD 619 million), nonferrous metals (USD 360 million), vegetables and fruit (USD 262 million), and clothes (USD 244 million). These four sections accounted for 33.1% of the overall exports.

In 2005, the structure of exports according to the products' economic destination was the following: reproduction goods 66%, consumer goods 28%, and equipment 6%.

The five items with the greatest import shares in 2005 were the following: oil and oil derivatives (USD 1385 million), motor vehicles (USD 692 million), general use industrial machines (USD 506 million), gas, natural and industrial (USD 417 million), and iron and steel (USD 409 million), and these accounted for 32.6 % of the overall imports. Major foreign trade partners in imports were the Russian Federation (USD 1669 million), Germany (USD 1207 million), and Italy (USD 964 million).

According to the Serbian Statistical Office, in 2005, the most commonly imported goods according to economic destination were reproduction goods 63%, followed by consumption goods 21% and equipment 16%.

Thanks to the ATM, since 2004, Serbian agriculture has marked a positive trade balance with the EU. These measures have provided Serbian agriculture free

export opportunities to the EU market (except for fish, baby beef, sugar, and wine for which quotas exist, quotas for fish and wine are common for all Western Balkan countries).

Serbia has a preferential status for export into the EU and tariff protection (average tariff protection is roughly at about 22%) for import from the EU. Since the year 2000, the agricultural sector in Serbia got time for reconstruction, modernization, privatization, standardization, and improvement in competitiveness. The free trade area will give Serbia an opportunity to check if Serbia was successful in exploiting challenges provided by the ATMs. Certainly, full liberalization will also lead to adaptation costs in the agricultural sector in the short and medium term.

2. The Model

The model that will be applied in this study is the global simulation model (GSIM) for the analysis of global, regional, and unilateral trade policy changes proposed by Francois and Hall (2009). This model has been used in a number of trade analysis articles, especially in cases where data is scarce (see e.g. David Vanzetti, Santiago Fernandez de Córdoba, and Veronica Chau 2005; Emelly Mutambatsere 2006; Sebastian Hess and Stephan von Cramon-Taubadel 2008; George S. Serletis and James J. Fetzler 2008).

To avoid unmanageable complexity in the model, the solution set of the model is reduced to those global prices that clear global markets. Having a global set of equilibrium prices allows back solving for national results. The representation of import demand is log-linearized and combined with generic export-supply equations (Francois and Hall 1997).

One of the basic assumptions of the model is national product differentiation, as imports are imperfect substitutes for each other. Thus the assumption is that products are distinguished by place of production. Across products from different sources, the elasticity of substitution is held to be equal and constant. Also the elasticity of demand in aggregate is held constant. Similarly, import supply elasticity is constant too. This approach is consistent with the Paul S. Armington (1969) approach to product differentiation at the national level.

The core equation for the global market clearing condition for each export variety is the following:

$$\begin{aligned} \hat{M}_{i,r} &= \hat{X}_{i,r} \Rightarrow \\ E_{X(i,r)} \hat{P}_{i,r}^* &= \sum_v N_{(i,v),(r,r)} \hat{P}_{(i,v),r} + \sum_v \sum_{s \neq r} N_{(i,v),(r,s)} \hat{P}_{(i,v),s} = \sum_v N_{(i,v),(r,r)} [P_r^* + \hat{T}_{(i,v),r}] \\ &+ \sum_v \sum_{s \neq r} N_{(i,v),(r,s)} [\hat{P}_s^* + \hat{T}_{(i,v),s}] \end{aligned}$$

where $\hat{}$ denotes a proportional change, r and s the exporting regions, v the importing regions, and i the industry designation. M and X represent imports and exports in quantities, respectively. $E_{X(i,r)}$ is the elasticity of export supply and $P_{i,r}^*$ the world price for exports from region r in industry i . $N_{(i,v),(r,r)}$ is the own price demand elastic-

ity, $P_{(i,v),r}$ is the internal price for goods from region r imported into region v , and $N_{(i,v),(r,s)}$ is the cross-price elasticity. Finally, $T_{(i,v),r}$ is the power of the tariff, $T=(1+t)$. For any set of R trading countries, this equation can be used to define $S \leq R$ global market clearing conditions with R exporters. If also domestic production is modeled, there are exactly $R=S$ market clearing conditions. A more detailed description and definition of the relevant own- and cross-price elasticities, global supply and demand definitions can be found in Francois and Hall (2009).

Overall, the GSIM model allows partial equilibrium analysis of trade policy on a global level. The framework employs national product differentiation, and allows for the simultaneous assessment of trade policy changes, at the industry level, on a global, regional, or national level. Results allow the assessment of importer and exporter effects related to tariff revenues as well as exporter and importer surplus. The GSIM model can be implemented in the Excel statistical software package, where the Excel Solver tool is then used to solve the above core equation for the global market clearing condition for each export variety.

Using a fully-fledged general equilibrium model (which would have to include a full endogenization of income and expenditure levels across the region) is not possible because Serbia lacks the necessary input–output tables. However, the partial equilibrium approach implies useful advantages because it allows for a rapid and transparent analysis of a wide range of commercial policy issues with a minimum of data and computational requirements.

Having the limitations of the partial equilibrium approach in mind, useful insights can be drawn with regard to complex, multicountry trade policy changes at the industry level. The results of the GSIM allow for the assessment of importer and exporter effects related to tariff revenues, exporter (producer) surplus, and importer (consumer) surplus.

The model requires the input of a bilateral trade matrix at world prices, an initial matrix of bilateral import tariffs in ad valorem form, a final matrix of bilateral import tariffs in ad valorem form, export supply elasticities, aggregate import demand elasticities, and elasticities of substitution. Using additional data, domestic production effects can also be fitted into framework.

3. The Data

The data necessary to run the GSIM model are detailed tariff (as well as data on subsidies if existing) and trade data (including data for trade with self, i.e. production less exports) as well as estimates of demand, supply, and substitution elasticities. Data on trade as well as applied import-weighted tariff rates were taken from the *United Nations Conference on Trade and Development* (UNCTAD) Trade Analysis and Information System (Trains) database via the World Bank's World Integrated Trade Solution (WITS) software.

Data stems in general from the year 2005. With regard to the trade with self (gross output less exports) data were taken from the Serbian Statistical Office.

However, nontariff barriers (NTB) such as quotas were not included. This is especially a problem in the case of the EU data on protection from imports from the SEE region. In 2000, the EU granted ATMs to the five "West-Balkan" countries:

Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia, and Montenegro, liberalizing 95% of their exports to the EU. The remaining barriers are tariff quotas on imports of wine, baby beef, and certain fishery products, and some NTBs in the textile industry. For many products licensing is required. For the purpose of this article, EU tariff against Serbia were assumed to be zero.

The export supply elasticity (1.5), aggregate import demand elasticity (-1.25), and the elasticity of substitution (5) were adopted from Francois and Hall (2009). However, in the case of the EU and the rest of world (ROW) “infinite” export supply elasticity (9999999) was assumed. This flattens out the supply curves and is in line with a small versus large country assumption. For Serbia, it was assumed that the elasticity of substitution is at 7.5, indicating that citizens of Serbia prefer to a lesser extent local products to foreign compared with the EU and the ROW. This is based on evidence that Serbian society has a long tradition of migration, which might have influenced local preferences.

These are certainly very simplified assumptions. However, because of the scarce data it would be impossible to estimate “true elasticities”. An alternative approach would be to employ average elasticities, as for example, described in 22 industry studies by Patrick A. Messerlin (2001). There, especially the elasticities of substitution seem to be in general much lower than 5. However, in the literature, an elasticity of substitution of 5 is used quite often (see also Masahisa Fujita, Paul Krugman, and Anthony J. Venables 2001).

4. The Results

After feeding the model step by step with the initial bilateral trade matrix (including trade with self) at world prices, the initial matrix of bilateral import tariffs in ad valorem form, the final matrix of bilateral import tariffs in ad valorem, and the elasticities, the following output was estimated: trade effects, welfare effects (producer surplus, consumer surplus and change in tariff revenue) and price, and output changes. This task was done for 30 industries at the NACE 2-digit level.

If a full liberalization of trade between Serbia and the EU countries was assumed, Serbia would take over all EU tariffs against the rest of the world as well as face the tariff protection of the rest of world against the EU.

According to the model assumptions, we can expect that the overall net welfare effects of liberalization should be substantially negative notably because of the strong losses in tariff revenues and producer surplus, which cannot be fully outweighed by the consumer surplus in the wake of falling prices.

All the results of this exercise have to be seen with caution, because they are generated with the help of a partial equilibrium model instead of a general equilibrium model. Better performances of the general equilibrium model if the respective data were available could have helped find a shift from import competing and protected sectors to the export sectors and nontradable sectors with potential significant output increases in some of them. This is not possible to be observed in the partial equilibrium model.

Table 1 Estimated Serbian Output and Tariff Revenue Changes

ISIC Rev. 3.1.	Av. import weighted tariffs for imports from EU, 2005	Est. output change EU scenario	Est. output change	Est. output change	Est. empl. change	Est. tariff revenue change EU scenario
		In %	in 1000 USD	in %	in persons	in 1000 USD
01 Agriculture	10.05	-1.3	-81978	40%	-831	-149914.189
15 Food products and beverages	20.39	-1.3	-52691	26%	-1180	-29202.9
26 Other non metallic mineral	9.60	-3.5	-21997	11%	-969	-17183.4
28 Fabricated metal products	7.13	-2.8	-20148	10%	-913	-15814.8
34 Motor vehicles	11.10	-6.4	-19982	10%	-1627	-60477.7
25 Rubber and plastic	7.98	-2.3	-17288	8%	-480	-12571.8
24 Chemicals	3.61	-1.2	-16887	8%	-347	-38501.7
29 Machinery	5.58	-2.6	-13689	7%	-923	-53553.7
36 Furniture	12.38	-3.9	-13112	6%	-702	-12635.6
31 Electrical machinery	7.66	-3.2	-9905	5%	-518	-14699.4
21 Pulp and paper	4.14	-1.6	-5600	3%	0	-9332.3
18 Wearing apparel	19.48	-2.6	-5242	3%	-723	-17240.7
22 Printed matter	4.98	-0.7	-4002	0	-135	-1816.7
17 Textile	10.99	-1.7	-3970	0	-370	-25137.7
20 Wood and products of wood	4.73	-1.3	-3542	0	-165	-3567.0
11 Crude petroleum and natural gas	4.94	-0.9	-3251	0	0	-13852.1
30 Office machinery and computers	1.21	-0.9	-2793	0	-41	-3139
14 Other mining and quarrying	2.09	-2.1	-1647	0	0	-991.7
05 Fish	7.09	-6.8	-1618	0	0	-886.1
27 Basic metals	2.84	-0.1	-1121	0	-23	-11250.7
10 Coal and lignite	1.68	-0.2	-975	0	0	-210.4
33 Precision instruments	1.93	-0.4	-525	0	-29	-1343.8
02 Forestry	4.18	-0.4	-423	0	-25	-30.4
19 Leather	6.98	-0.3	-397	0	-40	-12605.1
13 Metal ores	1.00	-0.9	-379	0	0	-2144.4
40 Electrical energy, gas, steam	0.00	0.0	0	0	0	19.1
32 Radio, television, communication	11.00	0.3	384	0	13	2386.5
35 Other transport equipment	2.90	0.7	496	0	73	-1288.6
23 Coke, refined petroleum	2.21	0.2	597	0	9	590.8
16 Tobacco products	19.30	5.8	14333	0	138	-1678.0
In total			-205373		-8979	-358159.3

Source: United Nations Conference on Trade and Development (UNCTAD) Trade Analysis and Information System (Trains) database and authors' calculations.

We want to focus on the possible effects of Serbian membership to the EU on output (and as a consequence employment) and tariff revenues. Table 1 presents the most important results in this respect. The first column shows the average tariff rates of Serbia for imports from the EU in 2005 weighted by the respective import shares per NACE 2-digit sector.

Column one of Table 1 shows that the highest level of trade protection vis a vis imports from the EU in Serbia can be found in the food industry with a rate of more than 20%. The wearing apparel and tobacco industries follows with an effective average weighted tariff rate of about 19%, followed by the furniture industry with tariff rate above 12%. The industries with an effective average weighted tariff rate of about 11% are the motor vehicles industry, agriculture, textile, and radio, television, and communication equipment and apparatus. The remaining industries exhibit, in most cases levels of protection, somewhat less than 10% (rubber and plastic products, electrical machinery and apparatus, fish and other fishing products, leather and leather products, and other nonmetallic mineral products) and far below 10% (e.g. chemicals and chemical products, wood and products of wood, basic metals, medical precision, and optical instruments).

Column two of Table 1 presents the estimated output decline after full opening of Serbian markets for EU products and taking over of the EU tariff protection against the ROW. This is the result of declining prices and an increased share of Serbian consumption of cheaper EU (and in some cases ROW) goods. Serbian consumers will gain in real income, but this advantage might be a problem for the domestic producers and their employees in the respective industries. The model predicts not only overall consumer prices to decline but also the decline of producer and the market prices of the domestic goods. We can also assume that wages are sticky with regard to downward pressure and output drop could directly cause employment decline of same size.

The estimated output drop is biggest (-6.8) in fishing, which is not the most protected sector (average import weighted tariff rate against imports from the EU for this sector is 7.1%), and in motor vehicles, trailers and semitrailers (-6.4), which are also not the most protected sectors with an average import weighted tariff rate of 11.1%. Furniture (-3.9), nonmetallic mineral products (-3.5), and electrical machinery and apparatus (-3.2) follow next although they are not in the very top ranks of the tariff protection (respectively, they have average import weighted tariff rates of 12.4, 9.6, and 7.7).

When it comes to the most protected sectors, it is interesting to notice that one of the most protected sectors such as food and beverages with average import weighted tariff rates against goods from the EU of 20.4% has taken thirteenth place with estimated output change of -1.3. The same output change (-1.3) can be noticed in agriculture and wood and products of wood. Wearing apparel is one of the most protected sectors (19.5) with estimated output drop of -2.6. Chemicals sector with the protection of 3.6 will have estimated output change of -1.2. The other observed sectors will have estimated output changes below -1.

When comparing the results for the sector with the highest initial tariff protection (but only moderate estimated drop in output), the food processing sector, with

the sector with the highest estimated drop in output (but average initial tariff protection), the motor vehicles sector, the following can be observed.

In the case of the Serbian food processing sector, the assumed new EU-like tariff protection against ROW, although falling a bit, will remain quite high, even as the new tariff rate that Serbian food processors have to face when exporting to the ROW will drop a bit too. Therefore, Serbian food producers will mainly lose on the domestic market because of cheaper imports from the EU but might gain in trade with the ROW. On the other hand, Serbian motor vehicles producers will not only lose in price competition with EU producers but will also be hit by much lower protection against the ROW after EU accession as well as an increased rate of tariff when exporting to the ROW. This is notwithstanding recent developments in the restructuring of the Serbian car industry Zastava with the support of Fiat. As a model result for this sector, both the trade balance with the EU and the ROW worsens after a simulated EU accession. The situation is similar in sectors such as fishing and furniture. Thus, it is important for Serbian policy makers to also observe current levels of EU trade protection vis a vis the ROW to estimate the effects of an EU accession for the single industries. A detailed list of average tariff rates of all sectors analyzed for Serbia as well as the EU and the ROW can be found in the Appendix.

Figures in columns four and five in Table 1 are directly linked to the estimated output decline. The estimated output decline percentages were applied to the modified total production figures. In the agriculture sector, we can expect 81 million USD fall of production, which represents 40% of the overall estimated fall of production. Second comes the food and beverage sector with a decline about 52 million USD, which represents 26% of the overall estimated fall of production, followed by other nonmetallic mineral products (USD 21 million), fabricated metal products (20 million Euro) and motor vehicles, trailers, and semitrailers (USD 19.9 million), which respectively represent 11%, 10%, and 10% of the overall estimated fall in production. Rubber and chemicals sectors will have an estimated fall in output of 17 and 16.8 million Euros, which is 8% for each of the overall estimated fall in output.

The possible fall in employment in the respective sectors was also estimated. Using the estimated output decline percentages, the respective fall in the single industries was estimated. The sector that will be the most exposed to the loss of workers according to our estimation will be motor vehicles, trailers, and semitrailers (1627), followed by the food products and beverages (1180) sector. In agriculture, 831 employees will lose their job, 723 employees in wearing apparels, 720 in the furniture sector, and 370 in the textile sector. Again, these results are notwithstanding recent restructuring of Serbian industries, such as the motor vehicle industry, where in 2008 and 2009, about 20% of employment was cut.

Finally, the last column of Table 1 presents the estimated fall in tariff revenues. These results are driven both by the level of the tariff rate as well as by the level of imports. In the agriculture sector, a decline of a 142 million USD can be expected. Next comes motor vehicles (60 million Euro), machinery and equipment (USD 53 million), chemicals with an estimated tariff revenue decline of 38 million USD, and food and beverages (USD 25 million). Textile also will most probably face a decline of about 25 million USD in tariff revenue. The remaining sectors will have declines in tariff revenue below 20 million USD.

5. Conclusions

In this article, a partial equilibrium model was used to simulate the effects of full trade liberalization between the EU and Serbia for 30 different industries. As it was supposed, most of the changes in welfare after a full liberalization of trade between Serbia and the EU can be expected in those sectors where Serbia has specialized and protection against imports from the EU is strong, which is, for example, the food processing industry and agriculture. However, losses could also occur in sectors that currently face strong protection against the ROW and will lose this protection after an EU accession. Trade liberalization will lead to a substantial loss of tariff revenues. Reduced consumer prices will, on the one hand increase consumer surplus, but on the other hand decrease producer surplus and output.

Abolishment of some of the remaining NTBs not covered in this research might actually lead to a brighter picture of output development after trade liberalization. In addition, other measures (e.g. exchange rate policy) can have effects on trade and change the presented results not covered in this research. It has to be stressed that free trade is desirable because of the positive effects it has upon the efficient distribution of resources. Inward orientation is negatively related with economic growth in the long run.

This research could support the design of appropriate Serbian industry and employment policy and possible compensating policies by indicating potential sectors that might face problems with trade liberalization.

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Appendix

Table 1 Average Bilateral Tariff Rates

2005 applied weighted average tariff rates by sector	EU tariff against RS imports	ROW tariff against RS imports	RS tariff against EU imports	RS tariff against ROW imports	ROW tariff against EU imports	EU tariff against ROW imports
01 Agriculture	0	8.82	10.05	9.79	7.11	8.18
02 Forestry	0	0.13	4.18	3.34	2.4	3.24
05 Fish	0	5.4	7.09	19.73	3.26	2.25
10 Coal and lignite	0	0	1.68	2.83	0.66	2.14
11 Crude petroleum and natural gas	0	0	4.94	1	0	0.02
13 Metal ores	0	0.26	0	1	1.23	0.1
14 Other mining products	0	0.72	2.09	2.41	6.88	0.4
15 Food products and beverages	0	12.61	20.39	18.24	10.14	15.53
16 Tobacco products	0	23.35	19.3	18.84	20.7	29.93
17 Textile	0	11.28	10.99	10.65	6.48	3.39
18 Wearing apparel	0	11.07	19.48	20.2	6.96	7.72
19 Leather	0	6.74	6.98	11.83	6.58	4.54
20 Wood and products of wood	0	2.03	4.73	3.67	2.57	1.97
21 Pulp, paper, and paper products	0	3.91	4.14	4.31	5.42	1.96
22 Printed matter and recorded media	0	3.21	4.98	4.8	2.01	2.04
23 Coke, refined petroleum products	0	8.45	2.21	1.72	5.42	2.02
24 Chemicals, chemical products	0	4.77	7.98	3.93	2.86	1.47
25 Rubber and plastic products	0	5.08	7.98	8.74	5.42	2.6
26 Other nonmetallic mineral products	0	9.81	9.6	10.8	5.3	2.97
27 Basic metals	0	3.31	2.84	3.33	3.38	2.09
28 Fabricated metal products, except machinery	0	5.13	7.13	7.45	5.3	2.62
29 Machinery and equipment	0	4.03	5.58	6.15	3.57	1.77
30 Office machinery and computers	0	0.15	1.21	1.24	0.93	0.15
31 Electrical machinery	0	5.75	7.66	7.87	4.67	2.38
32 Radio, television, and communication equipment	0	1.81	11	10.37	2.31	1.61
34 Motor vehicles, trailers, and semitrailers	0	5.62	11.1	10.71	5.69	3.04
35 Transport equipment	0	9.34	2.9	3.76	1.85	2.08
36 Furniture	0	2.83	12.38	11.43	2.02	3.94
40 Electrical energy	0	2.2	0	0	1.18	0.3

Source: UNCTAD Trains database.

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